FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

9 to 15 March, 2014 (Week 11)

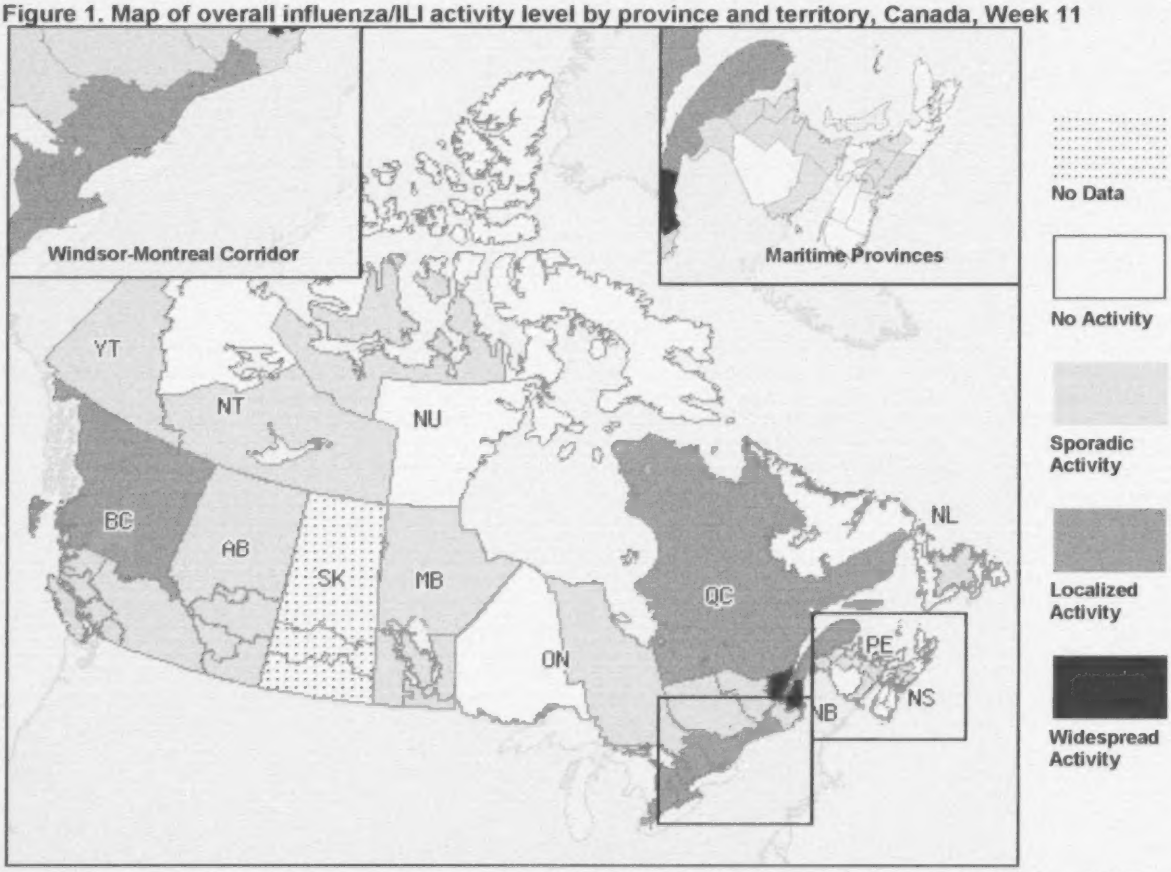
Overall Summary

- In week 11, influenza activity in Canada has increased slightly, with the majority of influenza viruses detected being influenza B. Overall, the influenza A(H1N1) virus remains the most common influenza virus circulating this season, and influenza activity remains within expected levels for this time of year.
- While the influenza A(H1N1) virus has mostly affected adults 20-64 years of age this season, influenza B is having a greater impact on adults 65 years of age and older, as well as young persons 5 to 19 years of age.
- As of week 11, 3,570 hospitalizations and 197 deaths have been reported from participating regions, which is comparable to reports in past influenza seasons.
- A Public Health Agency of Canada survey, conducted in February 2014, estimates that 39% of the Canadian population received the 2013-14 seasonal influenza vaccine, with higher coverage of 69.5% in Canadians aged 65 years and older.

Influenza/ILI Activity (geographic spread)

In week 11, influenza activity levels increased slightly. One region in Quebec reported widespread activity and nine regions (BC(1), ON(5), and QC(3)) reported localized activity (Figure 1).

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 11

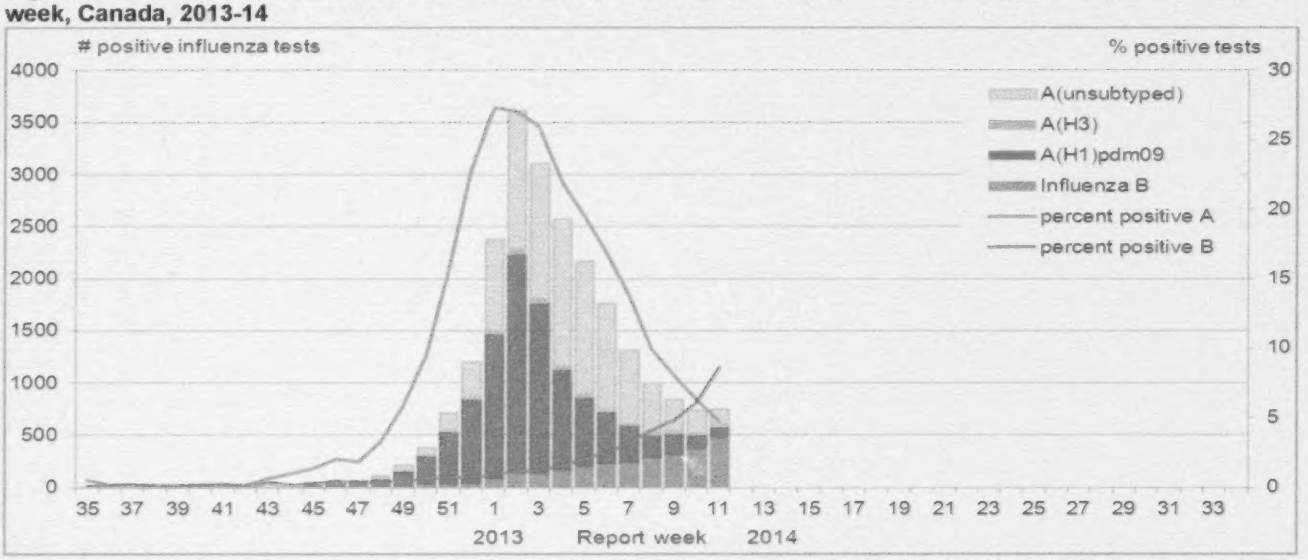


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests increased slightly, from 743 in week 10 to 750 in week 11, driven by increasing detections of influenza B. The percentage of positive influenza tests increased from 12.3% in week 10 to 13.4% in week 11, with 65% of positive tests being influenza B (Figure 2). The highest percentages of influenza B among positive tests have been reported from Newfoundland & Labrador (29.2%) and Quebec (23.8%), followed by Ontario (11.1%) and British Columbia (8.1%). Despite the late-season circulation of influenza B, the predominant influenza virus this season remains A(H1N1)pdm09 (Table 1). Among the 18,962 cases for which information on age and type/subtype has been received this season, 54.9% were 20-64 years of age (Table 2). Significantly greater proportions of influenza B cases have been ≥65 years of age and 5-19 years of age compared to cases of A(H1N1)pdm09.

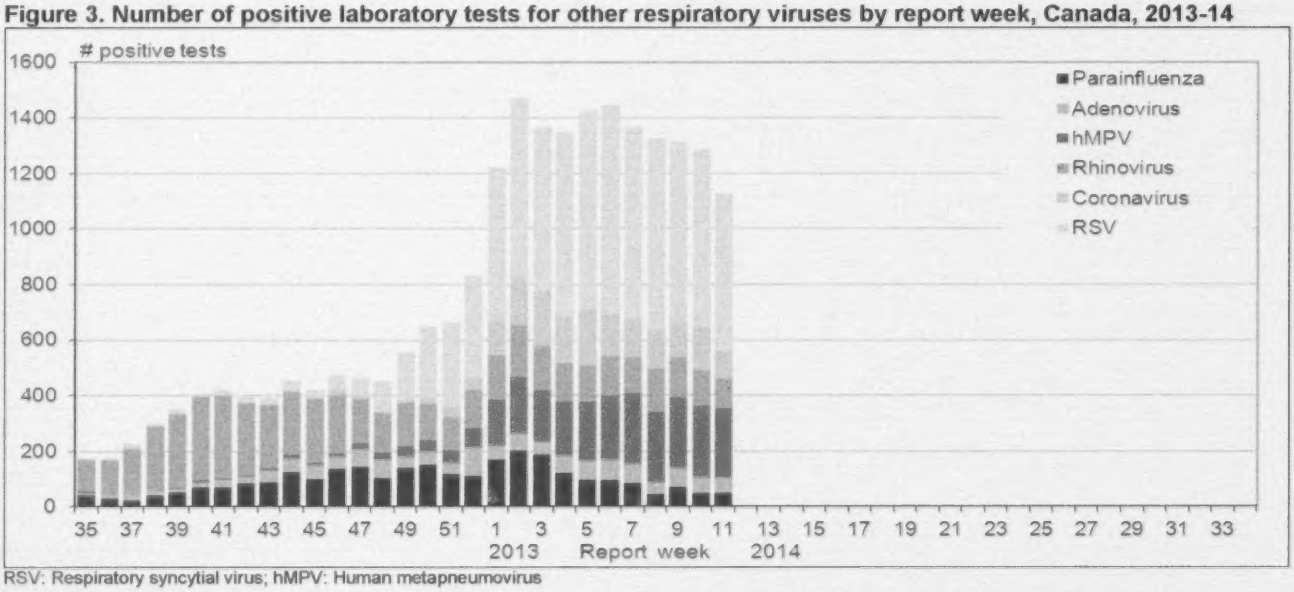
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV has been declining gradually over recent weeks, similar to the trend observed in recent seasons. The number of positive tests for parainfluenza was stable in week 11 and has been on a downward trend since week 02. The number of positive tests for adenovirus and rhinovirus have decreased in recent weeks; and in week 11, detections of coronavirus resumed a decline that started in week 05. The number of positive tests for human metapneumovirus has been higher than during the same period last season and has been similar over the past 5 weeks (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (March 9 to 15, 2014)					Cumulative (August 25, 2013 to March 15, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	30	18	6	6	33	1755	1592	50	113	155
AB	46	5	4	37	28	3719	3371	53	295	151
SK	6	5	1	0	10	1349	972	6	371	44
MB	27	24	0	3	0	622	446	1	175	15
ON	56	26	11	19	159	5488	2416	265	2807	682
QC	80	7	0	73	242	5231	672	3	4556	1633
NB	8	0	0	8	5	1488	370	1	1117	23
NS	10	10	0	0	0	163	134	4	25	3
PE	1	1	0	0	0	118	117	0	1	1
NL	1	0	0	1	8	340	104	0	236	140
Canada	**265**	**96**	**22**	**147**	**485**	**20273**	**10194**	**383**	**9696**	**2847**
Percentage[2]	35.3%	36.2%	8.3%	55.5%	64.7%	87.7%	50.3%	1.9%	47.8%	12.3%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

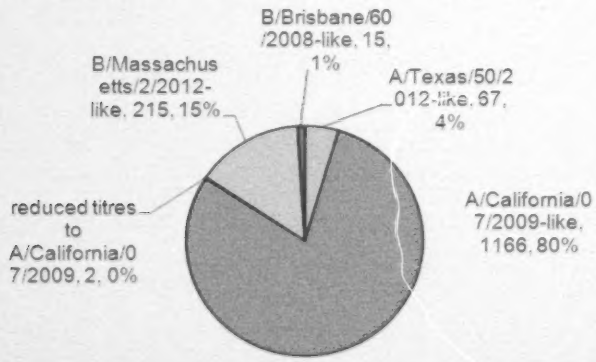
Age groups (years)	Weekly (March 9 to 15, 2014)					Cumulative (August 25, 2013 to March 15, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	36	6	5	25	30	3157	1404	31	1722	277	3434	18.1%
5-19	13	3	1	9	43	1288	687	19	582	447	1735	9.1%
20-44	39	17	1	21	45	4971	2751	40	2180	462	5433	28.7%
45-64	49	10	1	38	78	4342	2339	45	1958	632	4974	26.2%
65+	39	9	1	29	116	2402	975	102	1325	849	3251	17.1%
Unknown	0	0	0	0	0	132	102	18	12	3	135	0.7%
Total	176	45	9	122	312	16292	8258	255	7779	2670	18962	100.0%
Percentage[2]	36.1%	25.6%	5.1%	69.3%	63.9%	85.9%	50.7%	1.6%	47.7%	14.1%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 1465 influenza viruses [67 A(H3N2), 1168 A(H1N1)pdm09 and 230 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Fifteen influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 1465



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 1098 influenza viruses for resistance to oseltamivir and all but two were sensitive. All 1102 viruses tested for resistance to zanamivir were sensitive. All 1264 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

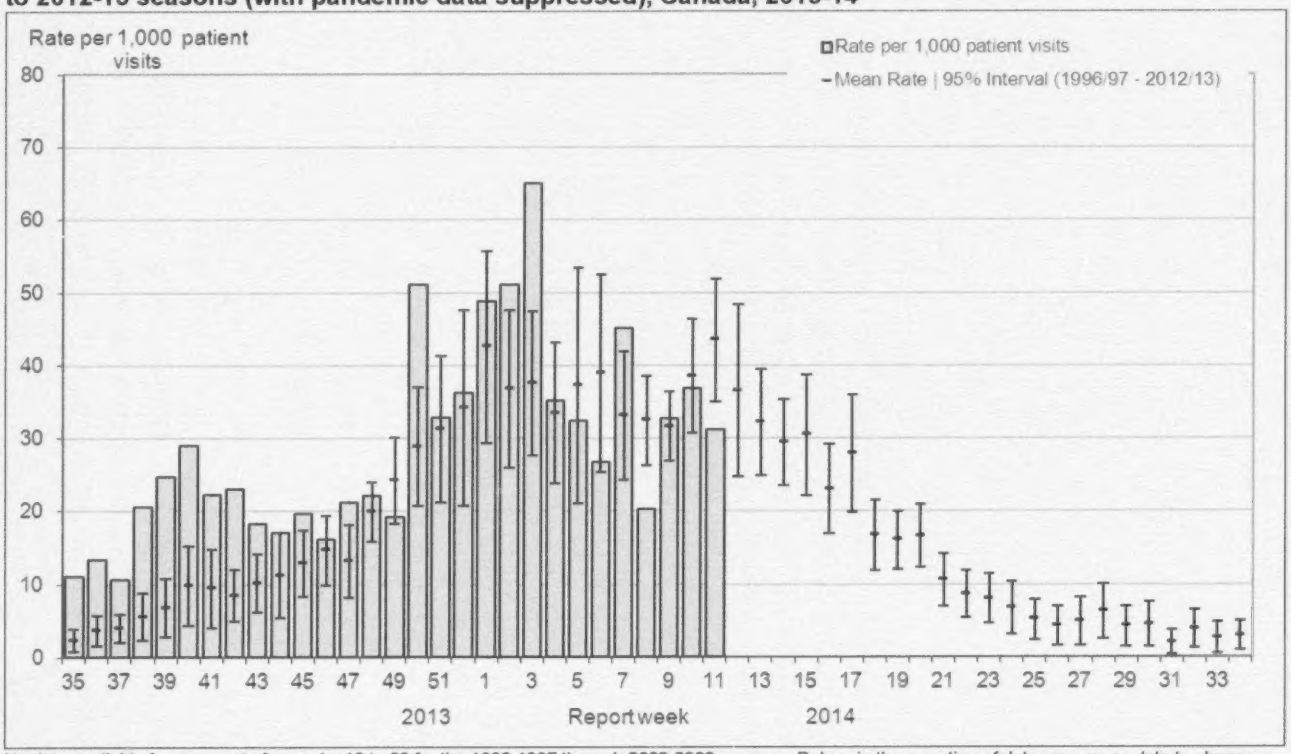
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	55	0	55	0	91	91 (100%)
A (H1N1)	913	2 (0.2%)	918	0	1173	1173 (100%)
B	130	0	129	0	NA[1]	NA[1]
TOTAL	1098	2 (0.2%)	1102	0	1264	1264 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased from 36.9/1,000 in week 10 to 31.2/1,000 in week 11; and was below the expected range for week 11 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

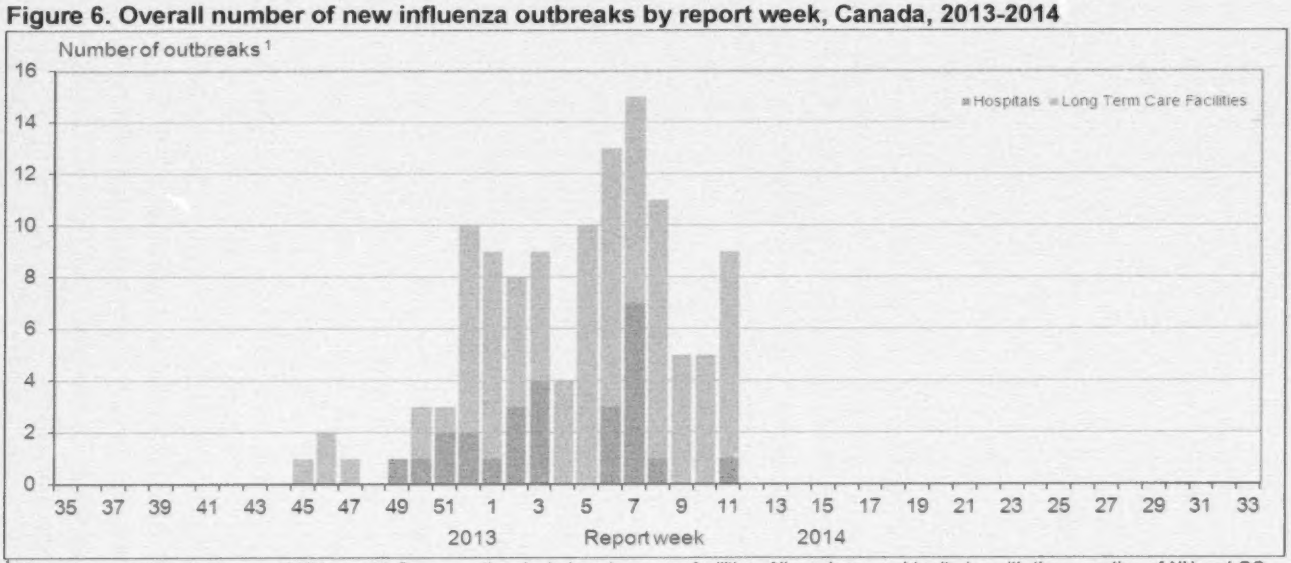


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 11, nine new influenza outbreaks were reported: eight in long-term care facilities (LTCF) and one in a hospital (Figure 6). In addition, one outbreak of influenza-like-illness was reported in a school. Among the seven LTCF outbreaks with available data, three were reported to be due to influenza B.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

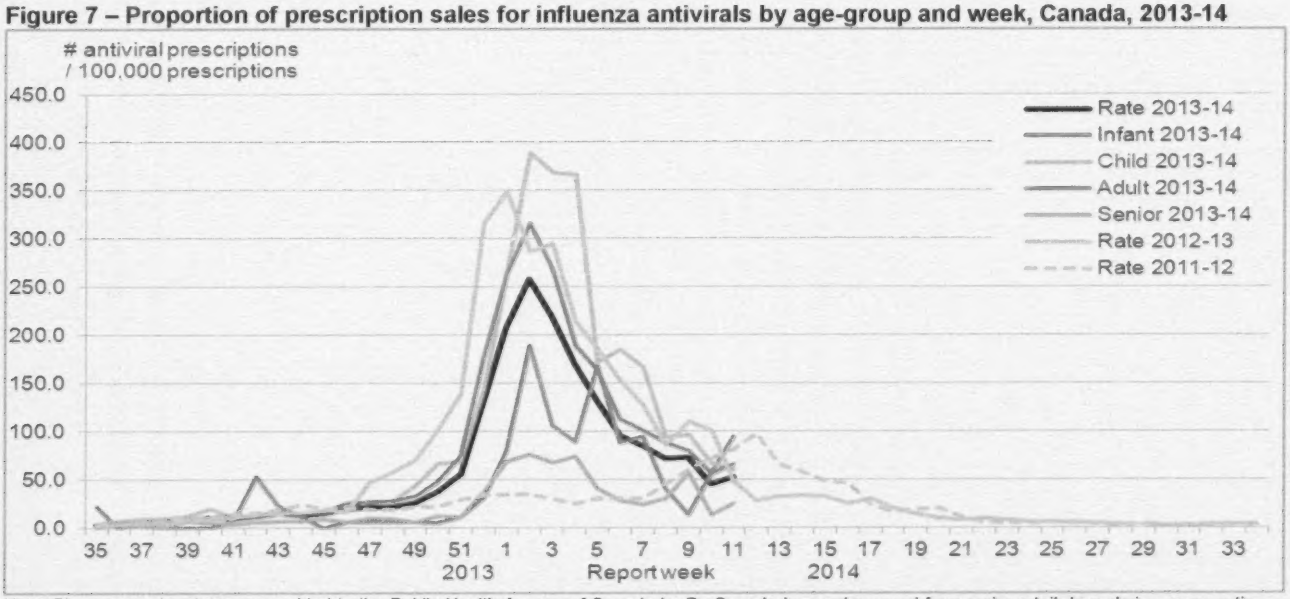


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 11, the overall proportion of prescriptions for influenza antivirals increased slightly, based on increases in all age-groups except children 2-18 years of age. The proportion of prescriptions for infants (<2 years of age) increased for the second week in a row, however, the number of prescriptions in this age-group is small. Overall this season, the largest proportion of prescriptions for antivirals has been among children 2-18 years of age and adults 19-64 years of age, in keeping with laboratory detections of influenza (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 11, 22 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 38 in week 10. In keeping with the increased circulation of influenza B, influenza B was reported in 12 of the 22 cases in week 11 (Figure 8a). Although the number of cases is small, a greater proportion of cases with influenza B this season have been children between 2 and 10 years of age compared to A(H1N1)pdm09. In week 11, one ICU admission was reported in a child 6-23 months of age with influenza A(unsubtyped). No deaths were reported in week 11.

To date this season, a total of 613 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 88% of which have been influenza A, and almost all of those subtyped (97%) were A(H1N1)pdm09. Children <5 years of age represent 74% of cases to date (Table 4). Eighty-six ICU admissions have been reported, of which 58 (67%) were children <5 years of age (Figure 9a). All but five were cases with influenza A, and 96% of those subtyped were A(H1N1)pdm09. Among the 79 ICU cases with available data, 51 (65%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 11, 32 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 55 in week 10. In week 11, there continued to be more hospitalizations associated with influenza B than influenza A (Figure 8b). All but seven hospitalizations occurred among adults ≥45 years of age. No ICU admissions or deaths were reported in week 11.

To date this season, 1250 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 1105 (88.4%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 209 hospitalizations, all but eight of which were cases with influenza A (112 A(H1N1)pdm09, five A(H3N2) and 84 A(unsubtyped)). More than three quarters of hospitalizations and approximately 80% of ICU admissions were ≥45 years of age. Of the 168 ICU admissions with available information, 148 (88.1%) were reported to have at least one comorbidity and of the 180 ICU admissions with available information 131 (72.8%) reported not having been vaccinated this season. Fifty-eight deaths have been reported, all but four with influenza A (32 A(H1N1)pdm09, two A(H3N2) and 20 A(unsubtyped)); six cases 20-44 years of age, 27 cases 45-64 years of age and 25 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

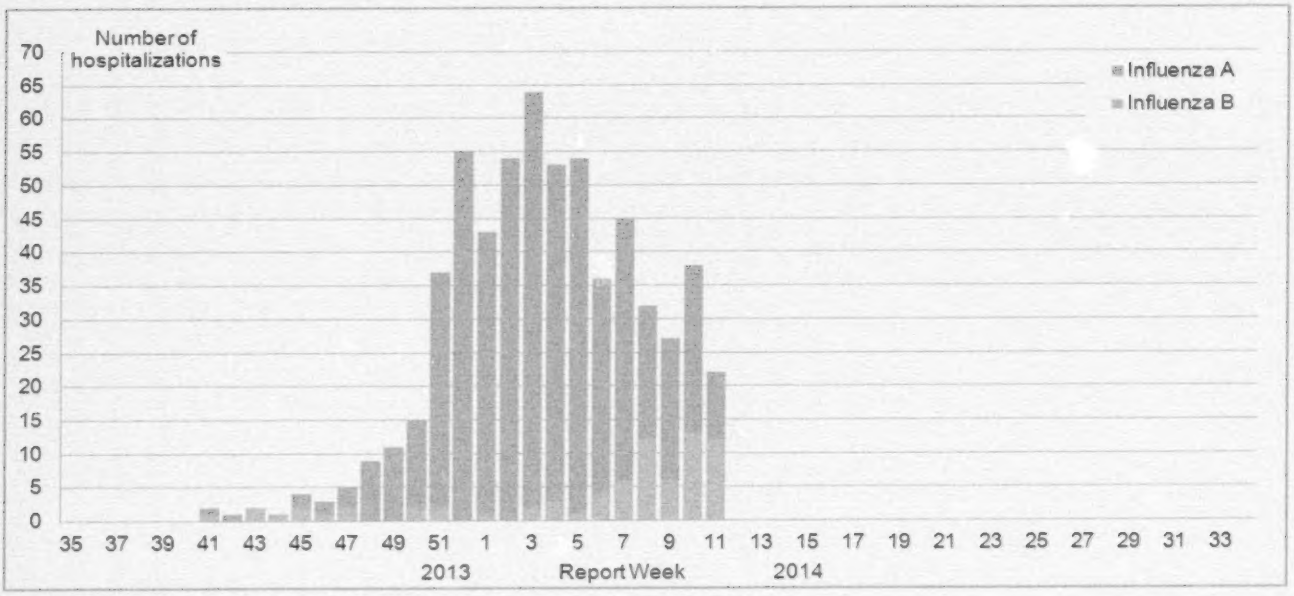
Age groups	Cumulative (25 Aug. 2013 to 15 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	102	33	0	69	3	105 (17%)
6-23m	157	45	1	111	9	166 (27%)
2-4y	159	53	3	103	24	183 (30%)
5-9y	81	25	0	56	30	111 (18%)
10-16y	41	15	1	25	7	48 (8%)
Total	540	171	5	364	73	613
% [1]	88.1%	31.7%	0.9%	67.4%	11.9%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

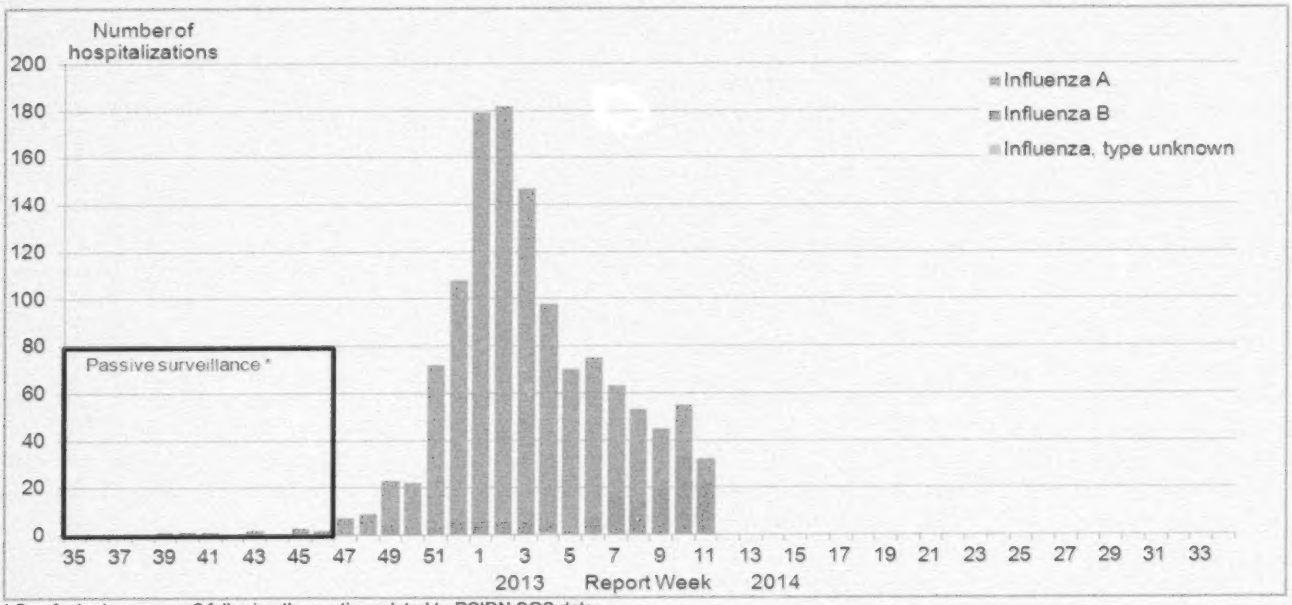
Age groups (years)	Cumulative (25 Aug. 2013 to 15 Mar. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	13	3	0	10	1	14 (1%)
20-44	241	127	4	110	10	251 (20%)
45-64	433	201	5	227	35	468 (38%)
65+	415	201	32	182	98	513 (41%)
Total	1102	532	41	529	144	1246
% [1]	88%	48%	4%	48%	12%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * One case for which the influenza type has not yet been reported, and three cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



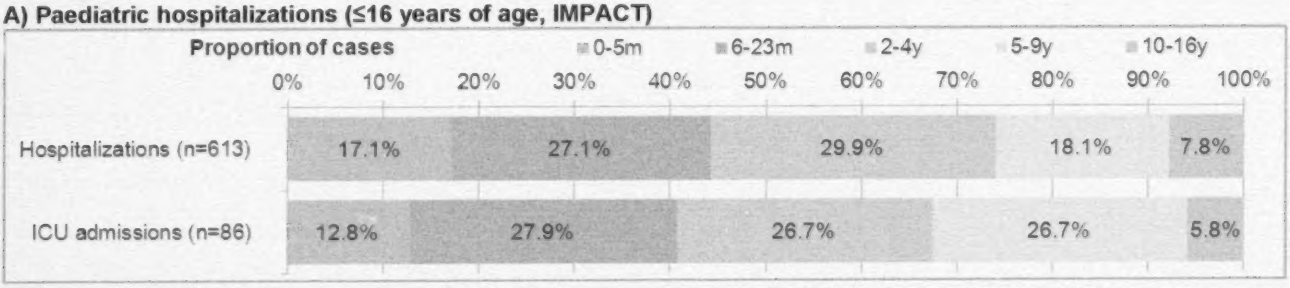
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



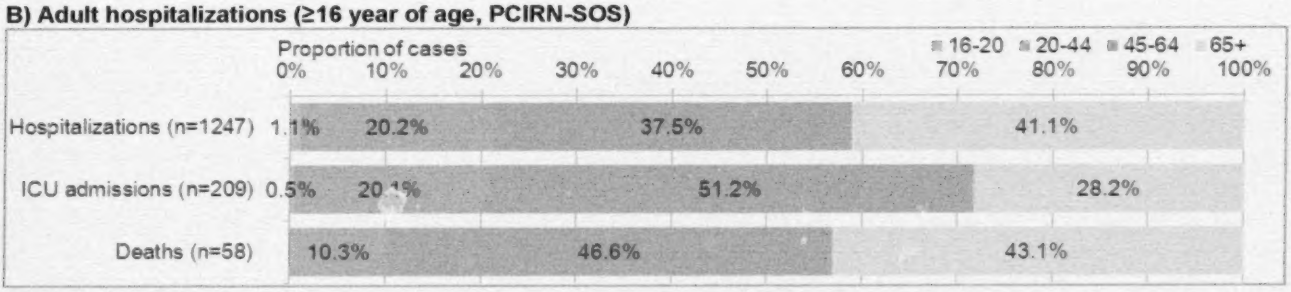
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 11, 94 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* As with other surveillance indicators in week 11, the majority were cases of influenza B (52, 55.3%). Among the five ICU admissions reported in week 11, three were adults 45-64 years of age. One death was reported in week 11, an adult ≥65 years of age with influenza B. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 3,570 influenza-associated hospitalizations have been reported, 93.2% with influenza A. The majority (57.4%) of hospitalizations have been cases 45 years of age of older. A significantly greater proportion of cases of influenza B have been ≥65 years of age compared to cases of A(H1N1)pdm09 this season (Table 6). A total of 324 ICU admissions have been reported this season, of which 66.6% were among adults 20-64 years of age. A total of 197 deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (49.7%), followed by adults ≥65 years of age (40.6%). In keeping with the late-season circulation, influenza B has been increasingly reported among severe cases of influenza. To date this season, influenza B has been reported in 6.8% of hospitalizations, 1.5% of ICU admissions, and 5.6 % of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 15 Mar. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	568	275	6	287	36	604 (17%)
5-14	125	64	6	55	35	160 (4%)
15-19	34	19	3	12	1	35 (1%)
20-44	577	408	4	165	15	592 (17%)
45-64	1052	675	21	356	52	1104 (31%)
65+	844	448	63	333	100	944 (26%)
Unknown	127	92	3	29	4	128 (4%)
Total	3327	1981	106	1237	243	3567
Percentage[1]	93.3%	59.5%	3.2%	37.2%	6.8%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Three new cases of human infection with influenza A(H7N9) have been reported by the World Health Organization since the last FluWatch report. Globally to March 20, 2014, the WHO has been informed of a total of 391 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 121 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Eight new laboratory-confirmed cases of MERS-CoV, with one death, have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 197 laboratory-confirmed cases of infection with MERS-CoV, including 83 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.